

REMARKS

A restriction has been made under 35 U.S.C. 121 to one of the following inventions:

- I. Claims 1 to 13, drawn to a waterproofing membrane; and
- II. Claims 14 to 24, drawn to a method of making a waterproofing membrane.

Applicant hereby elects to prosecute the invention of Group I (claims 1 to 13). This election is made without traverse.

Claims 1, 2, 6 to 8, 12, and 13 have been rejected under 35 U.S.C. 102(b) as being anticipated by Sylvia (US Patent No. 3,581,779). Claims 2, 8, 12, and 13 have been canceled. Claims 1, 6, and 7 still remain under consideration.

Sylvia discloses a lightweight flexible roofing laminate that has an opaque polyvinyl fluoride film bonded to a water-resistant, resilient, flexible backing material (such as an asphalt-saturated felt, asphalt-impregnated nonwoven fiberglass mat, asphalt-saturated rag felt, neoprene-impregnated asbestos felt, rubber sheeting or the like) by an adhesive (such as butadiene-acrylonitrile copolymer adhesive). The film contains titanium dioxide and may be white or light colored. The adhesive is applied to a surface of the film and a surface of backing material prior to bringing the film and backing material together between nip rolls.

The invention as set forth in claim 1 and the claims depending therefrom is a roll of prefabricated asphalt-based waterproof roofing membrane that consists essentially of: an asphalt saturated reinforcing substrate; a preformed highly reflective thermoplastic elastomeric sheet layer; a polymer primer layer intermediate and bonded directly to a top surface of the top asphalt layer and a bottom surface of the highly reflective thermoplastic elastomeric sheet layer; and a release sheet. The asphalt saturated

reinforcing substrate has a top asphalt layer overlaying and coextensive with a top major surface of the asphalt saturated reinforcing substrate and a bottom asphalt layer overlaying and coextensive with the bottom major surface of the asphalt saturated reinforcing substrate. The highly reflective thermoplastic elastomeric sheet layer consists essentially of a polyvinyl chloride material and a reflective pigment. The highly reflective thermoplastic elastomeric sheet layer has a top surface forming a top surface of the prefabricated asphalt-based waterproof roofing membrane that has an initial solar reflectance of at least 0.65 and a solar reflectance of at least 0.50 after three years. The polymer primer layer is intermediate and bonded directly to a top surface of the top asphalt layer and a bottom surface of the highly reflective thermoplastic elastomeric sheet layer, is impermeable to oils and other colored components of the top asphalt layer, and keeps the oils and other colored components of the top asphalt layer from exuding into the highly reflective thermoplastic elastomeric sheet layer and reducing the reflectance of the highly reflective thermoplastic elastomeric sheet layer. The release sheet is on the top major surface or the bottom major surface of the prefabricated asphalt-based waterproof roofing membrane; is separable from the prefabricated asphalt-based waterproof roofing membrane; permits the prefabricated asphalt-based waterproof roofing membrane to be wound into the roll for packaging, storage, shipping, and handling without the bottom major surface of the asphalt saturated reinforcing substrate adhering to or discoloring the top surface of the highly reflective thermoplastic elastomeric sheet layer; and permits the prefabricated asphalt-based roofing membrane to be unwound from the roll for installation.

Sylvia does not disclose or suggest a prefabricated asphalt-based roofing membrane wherein the membrane has a highly reflective thermoplastic elastomeric sheet layer consisting essentially of a polyvinyl chloride material and a reflective pigment; a polymer primer layer, intermediate and bonded directly to a top surface of the

top asphalt layer and a bottom surface of the highly reflective thermoplastic elastomeric sheet layer, that is impermeable to oils and other colored components of the top asphalt layer and keeps the oils and other colored components of the top asphalt layer from exuding into the highly reflective thermoplastic elastomeric sheet layer and reducing the reflectance of the highly reflective thermoplastic elastomeric sheet layer; and a release sheet that permits the prefabricated asphalt-based waterproof roofing membrane to be wound into the roll for packaging, storage, shipping, and handling without the bottom major surface of the asphalt saturated reinforcing substrate adhering to or discoloring the top surface of the highly reflective thermoplastic elastomeric sheet layer; and permits the prefabricated asphalt-based roofing membrane to be unwound from the roll for installation. The top layer of the roofing laminate of Sylvia is a pigmented polyvinyl fluoride film not a polyvinyl chloride sheet. There is no indication in Sylvia that the adhesive of that laminate forms a barrier between the asphalt-impregnated nonwoven mat and the polyvinyl fluoride film to keep oils and other colored components of the asphalt from exuding into and discoloring or degrading the polyvinyl fluoride film. The laminate of Sylvia does not include a release sheet that permits the membrane to be wound into a roll without the bottom surface of the asphalt-impregnated nonwoven mat adhering to or discoloring the top surface of the polyvinyl fluoride film. In view of the amendments to claim 1 and for the reasons set forth above, the withdrawal of the rejection of claims 1, 6, and 7 as being anticipated by Sylvia is requested and the allowance of claims 1, 6, and 7 is solicited.

Claims 1 to 13 have been rejected under 35 U.S.C. 102(e) as being anticipated by Zanchetta et al (US Patent Application No. 2004/0009319). Claims 2 to 5 and 8 to 13 have been canceled. Claims 1, 6, and 7 still remain under consideration.

Zanchetta et al discloses a highly reflective and emissive roofing membrane composite that includes a composite sheet 1 having a top asphaltic coating layer 3, a

reinforcing carrier 2, and a bottom asphaltic coating layer 4 and a specially engineered surface laminate 9 (shown in Figures 2 and 3) that is bonded directly to the asphaltic coating layer 3 of the composite sheet 1. The specially engineered surface laminate 9 of Figure 2 includes a polyolefinic fabric 12, a polyolefinic sheet 15, and an adhesive 13 that bonds the fabric and sheet together. The specially engineered surface laminate 9 of Figure 3 includes a polyolefinic fabric 18, aluminum foil 20, and a polyolefinic sheet 22 bonded together with an adhesive.

The invention as set forth in claim 1 and the claims depending therefrom is a roll of prefabricated asphalt-based waterproof roofing membrane that consists essentially of: an asphalt saturated reinforcing substrate; a preformed highly reflective thermoplastic elastomeric sheet layer; a polymer primer layer intermediate and bonded directly to a top surface of the top asphalt layer and a bottom surface of the highly reflective thermoplastic elastomeric sheet layer; and a release sheet. The asphalt saturated reinforcing substrate has a top asphalt layer overlaying and coextensive with a top major surface of the asphalt saturated reinforcing substrate and a bottom asphalt layer overlaying and coextensive with the bottom major surface of the asphalt saturated reinforcing substrate. The highly reflective thermoplastic elastomeric sheet layer consists essentially of a polyvinyl chloride material and a reflective pigment. The highly reflective thermoplastic elastomeric sheet layer has a top surface forming a top surface of the prefabricated asphalt-based waterproof roofing membrane that has an initial solar reflectance of at least 0.65 and a solar reflectance of at least 0.50 after three years. The polymer primer layer is intermediate and bonded directly to a top surface of the top asphalt layer and a bottom surface of the highly reflective thermoplastic elastomeric sheet layer and is impermeable to oils and other colored components of the top asphalt layer and keeps the oils and other colored components of the top asphalt layer from exuding into the highly reflective thermoplastic elastomeric sheet layer and reducing the

reflectance of the highly reflective thermoplastic elastomeric sheet layer. The release sheet is on the top major surface or the bottom major surface of the prefabricated asphalt-based waterproof roofing membrane; is separable from the prefabricated asphalt-based waterproof roofing membrane; permits the prefabricated asphalt-based waterproof roofing membrane to be wound into the roll for packaging, storage, shipping, and handling without the bottom major surface of the asphalt saturated reinforcing substrate adhering to or discoloring the top surface of the highly reflective thermoplastic elastomeric sheet layer; and permits the prefabricated asphalt-based roofing membrane to be unwound from the roll for installation.

Zanchetta et al do not disclose or suggest a prefabricated asphalt-based roofing membrane wherein the membrane consists essentially of: a highly reflective thermoplastic elastomeric sheet layer that consists essentially of a polyvinyl chloride material and a reflective pigment; a polymer primer layer, intermediate and bonded directly to a top surface of the top asphalt layer and a bottom surface of the highly reflective thermoplastic elastomeric sheet layer, that is impermeable to oils and other colored components of the top asphalt layer and keeps the oils and other colored components of the top asphalt layer from exuding into the highly reflective thermoplastic elastomeric sheet layer and reducing the reflectance of the highly reflective thermoplastic elastomeric sheet layer; and a release sheet that permits the prefabricated asphalt-based waterproof roofing membrane to be wound into the roll for packaging, storage, shipping, and handling without the bottom major surface of the asphalt saturated reinforcing substrate adhering to or discoloring the top surface of the highly reflective thermoplastic elastomeric sheet layer and permits the prefabricated asphalt-based roofing membrane to be unwound from the roll for installation.

In fact, Zanchetta et al, aware of the problems associated with the exudation of oil from bitumen in asphalt-based waterproof roofing membranes and the discoloration

highly reflective top surfaces of such membranes due to such exudation, teaches away from the present invention that uses only a highly reflective pigment containing thermoplastic elastomer sheet layer in combination with a barrier primer layer (intermediate and bonded directly to the sheet layer and the top bitumen layer) to solve the discoloration problems of the previous asphalt-based roofing membranes by proposing the use of a specially engineered surface laminate. More specifically, Zanchetta et al teaches the utilization of a specifically engineered surface laminate on their roofing membrane that in Figure 2 includes a polyolefinic fabric 12, a polyolefinic sheet 15, and an adhesive 13 that bonds the fabric and sheet together and in Figure 3 includes a polyolefinic fabric 18, aluminum foil 20, and a polyolefinic sheet 22 bonded together with an adhesive. There is no indication in Zanchetta et al that the adhesive rather than the fabric of the specially engineered surface laminate the Zanchetta et al functions as a barrier to oils exuding from the bitumen of the membrane. The prefabricated asphalt-based waterproof roofing membrane of the subject invention provides a much less expensive, very different, uncomplicated solution to the problems of the prior art associated with the use of reflective thermoplastic elastomeric sheet layers on asphalt-based roofing membranes. As set forth in claim 1 and the claims depending therefrom, the highly reflective top surface of the prefabricated asphalt-based waterproof roofing membrane of the subject invention is required to be a thermoplastic elastomeric sheet layer consisting essentially of a polyvinyl chloride material and a reflective pigment and this highly reflective sheet layer is used in combination with and is protected from the top layer of bitumen of the asphalt saturated reinforcing substrate only by a polymer primer layer that is intermediate and bonded directly to the highly reflective layer and the top bitumen layer and impermeable to the oils and other colored components of the bitumen. In view of the amendments to claim 1 and for the reasons

set forth above, the withdrawal of the rejection of claims 1, 6, and 7 as being anticipated by Zanchetta et al is requested and the allowance of claims 1, 6, and 7 is solicited.

Claims 5 and 11 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Sylvia in view of Stierli (US Patent No. 4,442,148). Claims 5 and 11 have been canceled. However, in view of the amendments to claim 1, this rejection will be discussed in connection with claim 1.

Sylvia discloses a lightweight flexible roofing laminate that has an opaque polyvinyl fluoride film bonded to a water-resistant, resilient, flexible backing material (such as an asphalt-saturated felt, asphalt-impregnated nonwoven fiberglass mat, asphalt-saturated rag felt, neoprene-impregnated asbestos felt, rubber sheeting or the like) by an adhesive (such as butadiene-acrylonitrile copolymer adhesive). The film contains titanium dioxide and may be white or light colored. The adhesive is applied to a surface of the film and a surface of backing material prior to bringing the film and backing material together between nip rolls.

Stierli discloses a waterproofing laminate that has a self-adhesive oil-containing bituminous layer adhered to a support sheet and a release liner 4.

Sylvia does not disclose or suggest a prefabricated asphalt-based roofing membrane wherein the membrane has a preformed highly reflective thermoplastic elastomeric sheet layer consisting essentially of a polyvinyl chloride material and a reflective pigment; a polymer primer layer, intermediate and bonded directly to a top surface of the top asphalt layer and a bottom surface of the highly reflective thermoplastic elastomeric sheet layer, that is impermeable to oils and other colored components of the top asphalt layer and keeps the oils and other colored components of the top asphalt layer from exuding into the highly reflective thermoplastic elastomeric sheet layer and reducing the reflectance of the highly reflective thermoplastic elastomeric sheet layer; and a release sheet that permits the prefabricated asphalt-

based waterproof roofing membrane to be wound into the roll for packaging, storage, shipping, and handling without the bottom major surface of the asphalt saturated reinforcing substrate adhering to or discoloring the top surface of the highly reflective thermoplastic elastomeric sheet layer and permits the prefabricated asphalt-based roofing membrane to be unwound from the roll for installation. Even if a release liner such as the release liner of Stierli is used with the roofing laminate of Sylvia, Sylvia and Stierli do not disclose or suggest a prefabricated asphalt-based waterproof roofing membrane such as that of the subject invention having a highly reflective thermoplastic elastomeric sheet layer forming the top layer of the membrane that consists essentially of a polyvinyl chloride material and a reflective pigment and that is protected from oils and other colored components of the asphalt saturated reinforcing substrate by an impermeable polymer primer layer so that the reflectance of the highly reflective sheet layer is not reduced. The prefabricated asphalt-based waterproof roofing membrane of the subject invention, as set forth in claim 1 and the claims depending therefrom, includes a highly reflective thermoplastic elastomeric sheet layer that consists essentially of a polyvinyl chloride material and a reflective pigment in combination with an oil and other colored component impermeable polymer primer layer that protects the reflectance of the highly reflective layer from the oils and other colored components of the asphalt saturated reinforcing substrate. Neither Sylvia nor Stierli suggest the use of such a highly reflective sheet layer in combination with a oil impermeable polymer primer layer that keeps oils and other colored components of the asphalt saturated reinforcing substrate from reducing the reflectance of the highly reflective sheet layer. In view of the amendments to claim 1 and for the reasons set forth above, the allowance of claims 1, 6, and 7 over Sylvia and Stierli is solicited.

Claims 1 to 13 have been provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1 to 13 of copending Application No. 10/659,001.

The claims of this application and copending application no, 10/659,001 have both been amended so that the claims are not coextensive. For example, claim 1 of the subject application, as now amended, requires the top layer of the prefabricated asphalt-based waterproof roofing membrane to be a preformed sheet layer consisting essentially of a polyvinyl chloride material and a reflective pigment and claim 1 of copending application no. 10/659,001 requires the top layer of the prefabricated asphalt-based roofing membrane of that invention to be a coating layer consisting essentially of a polymer binder material selected from a group consisting essentially of acrylic-based elastomers and isocyanate-based elastomers and a reflective pigment. In view of these amendments the withdrawal of the rejection of the claims remaining under consideration under 35 U.S.C. 101 is solicited.

Respectfully submitted,



Attorney for Applicant

John D. Lister
Registration No. 23,004
(480) 641-7459